100A HV Brushless Speed Controller
INSTRUCTIONS

Thanks so much for purchasing Eurgle speed. Please read the instruction booklet carefully before flying to ensure to get optimal performance with least damage as possible and enjoy your flying.

Warnings

• We strongly **recommend** to calibrate the throttle range of transmitter when you first use the controller or when using a new/different transmitter or receiver.

• When connecting the ESC to battery pack, please ensure the polarity is correct. Incorrect polarity may cause permanent damage to the ESC and such damage is not covered by manufacturer's WARRANTY.

• When you use the ESC, turn on the transmitter BEFORE powering on the receiver.

• When you finish the flying, power off the receiver BEFORE turning off the transmitter.

• The limiting current is set to the 'standard mode' in factory. It is suitable for use in most configurations. Only experienced technicians can adjust this programming.

• In Governor Mode, the brake is always disabled and the soft cutoff is always active.

• Changing the PWM may cause the motor to heat ahead of time.

• Damage to the controller as a result of excessively high current is not covered by the manufacturer's

Ⅰ Introduction

The Eurgle controllers are outstanding and unique products in the R/C industry. They represent a great advance in electric flight by integrating a data logger with an electronic speed controller. There is no need for a separate logging device if you have a Eurgle controller! In addition, software updates for the controller can be downloaded from the Internet so your controller will never become obsolete. The Eurgle ESC give you all the data you need to be sure your aircraft is set up for its optimum performance. With the Eurgle, all you have to do is going to fly and having fun!

Ⅱ Unique Features

- Supports the 'Eurgle USB Linker' to program the ESC by computer.
- The firmware of the ESC can be upgradeable from Internet as the new version of the software becomes available.
- Integrated with the flight data logger, records data for the ENTIRE flight such as:
  - Voltage
  - Current
  - Temperature
  - Motor RPM
  - Throttle travel
- Compatible with Eurgle USB

Ⅲ Specifications

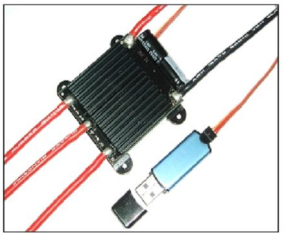
- Microprocessor controlled
- Extremely low resistance
- 100A continuous (120A surge)
- Up to 38 cells NiCad/NiMH or 4~12 cells Lithium-Polymer
- High rate adjustable switching (PWM: low/middle/high)
- No built-in BEC, Couple-OPTO

Ⅳ System Requirement

- Personal Computer with WINDOWS 2000 or WINDOWS XP operation system
- CD-ROM drive (or access to Internet)
- USB port available
- 4 Megabytes hard disk space
- Computer screen resolution with 800×600, 1024×768 (***Recommend***), 1280×1024.

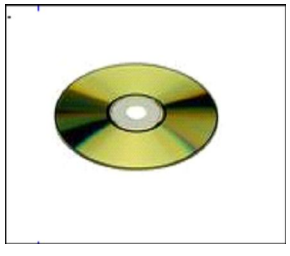
Ⅴ Hardware

There are not any more accessories needed, just the Eurgle ESC 100A HV， Eurgle 'USB Linker' and a Eurgle setup CD. It is easy to use for everyone from beginner to expert.



Eurgle ESC-100A HV

Eurgle USB Linker



Setup CD

Ⅵ Using the ESC

• Calibrate the throttle range of transmitter at the first time to use the controller ***(Recommend)***

- Correctly connect the ESC with brushless motor, plug the receiver lead of ESC into receiver (usually into Channel 3);
- Put the throttle to the highest position, turn on the transmitter;
- Power on the receiver, ESC and motor. There are 3 beeps emitted from the motor, which indicates all electronics are correctly power on for the setting.
- Then there are 4 long beeps emitted from the motor ♪ ♪ ♪ ♪ .
- During or after the 4 long beeps , move the throttle to the lowest position, at this point, you have calibrated the throttle range of your transmitter;
- Waiting one second, there will be two beeps emitted from the motor ♪ ♪
- Calibration of throttle is completed.

NOTE: 1). Eurgle ESC 100A HV has no built-in BEC, so a separate receiver pack or UBEC is needed to supply power for receiver and servos.

2). If you have succeeded in calibrating the throttle range of transmitter, the throttle range will be displayed in **'Programming Set' window** when you connect the controller to PC. The factory preset throttle range is 640 uS.

• Program the ESC' s settings or use the default setting (by Eurgle USB/ on PC/ by throttle stick)

Recommend: Please always clearly know current parameters of ESC before use, and program it according to your configuration. Please take the following form as reference to program the ESC (Default setting is displayed in blue. Throttle range in gray cannot be programmed but be auto changed after calibrating the throttle travel of transmitter.) Seeing the appendix about the detail programmable features of Eurgle ESC 100A HV.

LVC	Auto	5.0V	6.0V (2 Lipo)	7.2V	8.4V	9.0V (3 Lipo)	12.0V (4 Lipo)	15.0V (5 Lipo)	18.0V (6 Lipo)	21.0V (7 Lipo)	24.0V (8 Lipo)	27.0V (9 Lipo)	30.0V (10 Lipo)	33.0V (11 Lipo)	36.0V (12 Lipo)
Current Limiting	Sensitivity		Standard		Insensitivity		Disabled								
Brake Type	No brake		Soft brake		Hard brake										
Timing Advance	Auto		Low		Middle		High								
Cutoff Type	Hard cutoff		Soft cutoff												
Startup Type	Soft start		Standard		Fast start										
Governor Mode	Auto		Governor Low		Governor High										
PWM Rate	Low		Middle		High										
Throttle Range	640 uS														

NOTE: 1) You also can program the ESC 100A HV through Eurgle USB, but a separate receiver pack or UBEC (voltage must **be or less** than **6V**) is needed to connect to 'Reserve for OPTO'. Please read the manuals of 'Eurgle ESC USB Linker' for more detail instructions.

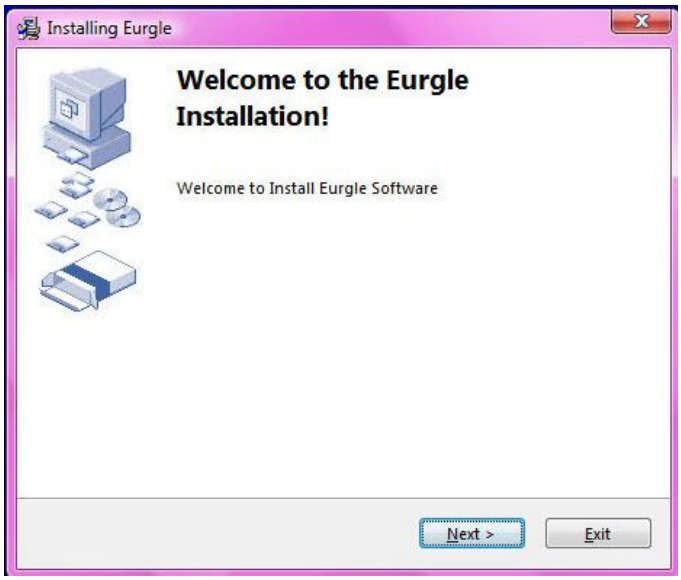
• In order to well record the flight data and utilize the storage of the logger, please set the **'Recorder Configuration'** in the menu of **'Data Logger'** after installing the Eurgle software. (see instructions in Ⅸ)

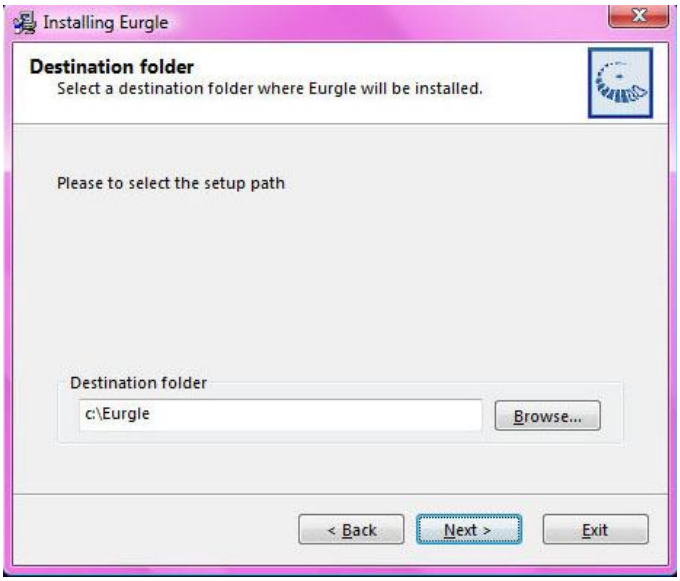
• When you finish the setting, repower the ESC, receiver and motor, there are two beeps emitted from the motor, then is ready to go fly and enjoy the flying.

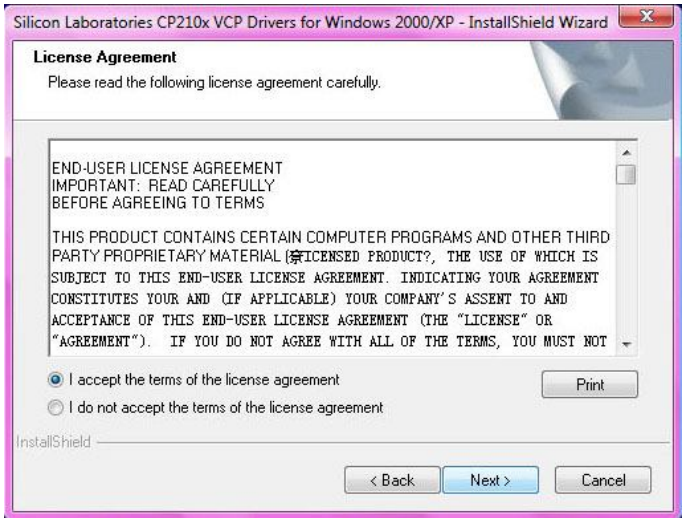
Ⅶ Installing Eurgle Software

• Insert the CD in the CD driver of the computer.
• Double click the **'Setup'** icon

NOTE: Never plug the USB Linker to USB port of PC BEFORE installation of software is successfully completed.






Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP - InstallShield Wizard
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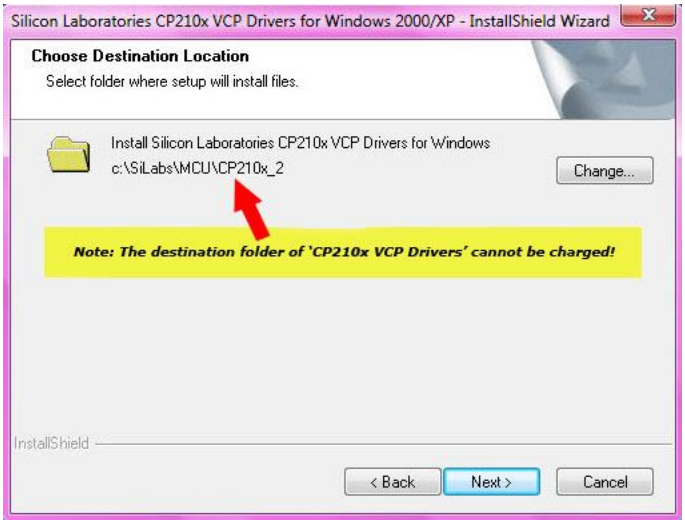
Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP - InstallShield Wizard
Choose Destination Location
Select folder where setup will install files.
Install Silicon Laboratories CP210x VCP Drivers for Windows
c:\SiLabs\MCU\CP210x_2
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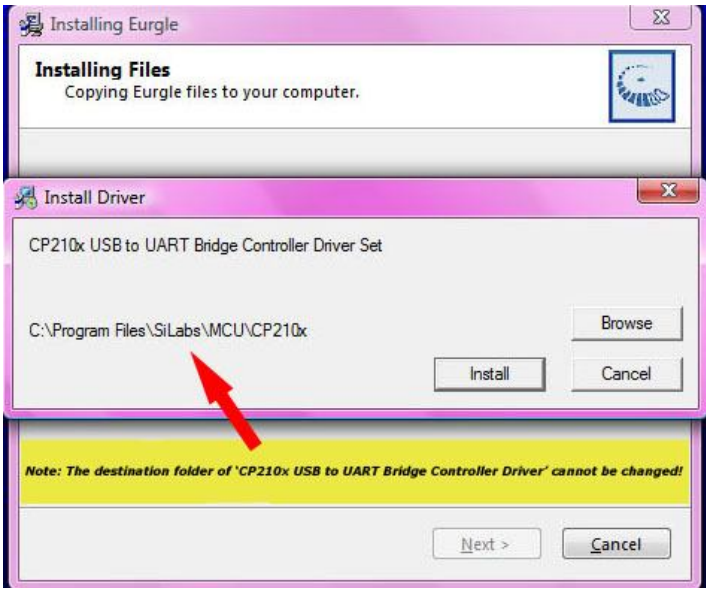

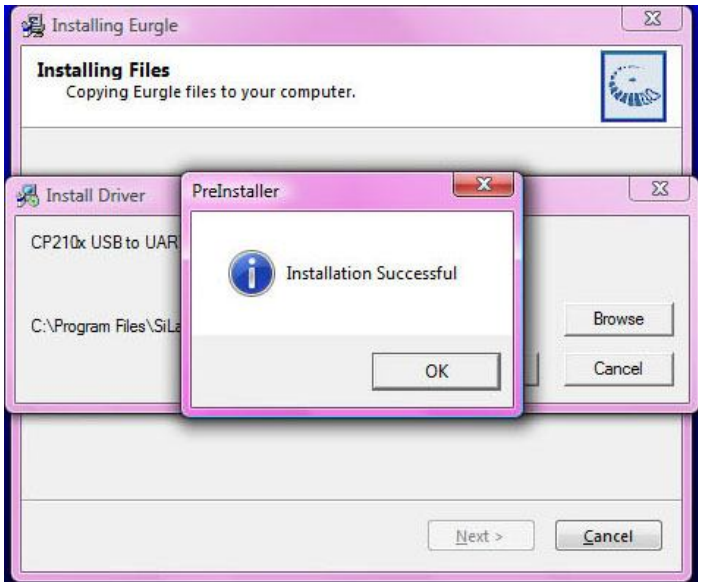

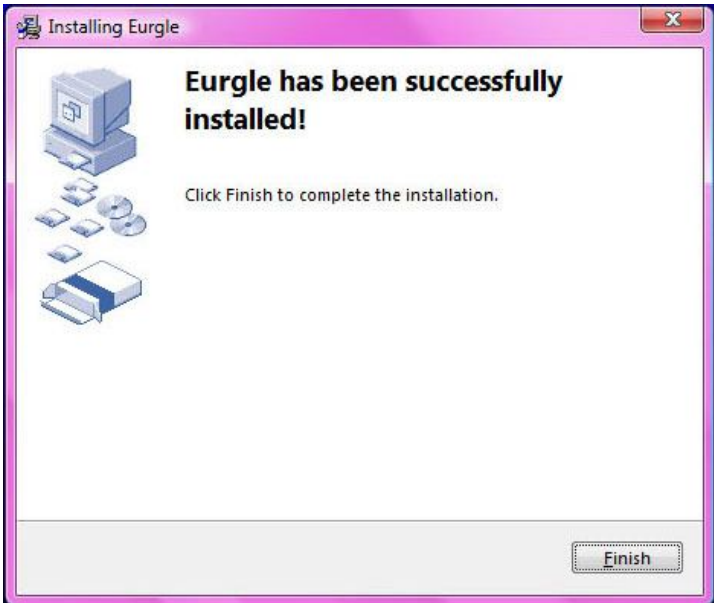

- After you click the **'finish'** button**,** there will be an icon **'Eurgle'** on your computer desktop.
- Installation complete.

NOTE: These two destination folders are both default and cannot be changed, otherwise the software cannot work normally.

Ⅷ How to connect the controller to PC

NOTE: **Eurgle 100A is a speed controller without built-in BEC, therefore, additional power supply is needed when reading data from ESC and programming on PC. An auxiliary 'Y' wires is used to supply power for reading data and programming.** 'Y' wires is consisted of a ' P Cable' (red and black) and a receiver lead (black, red and white).

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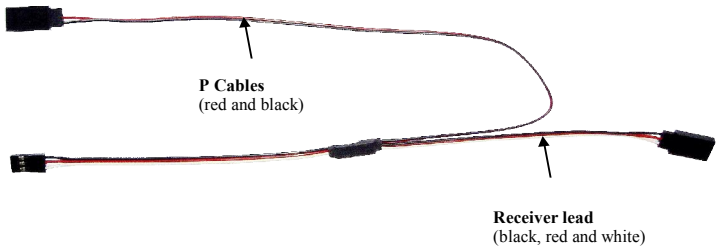
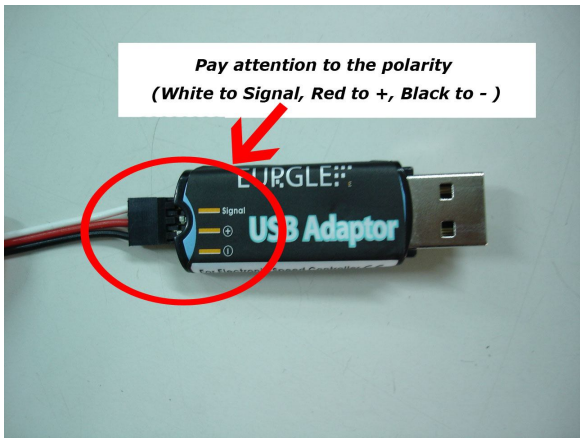
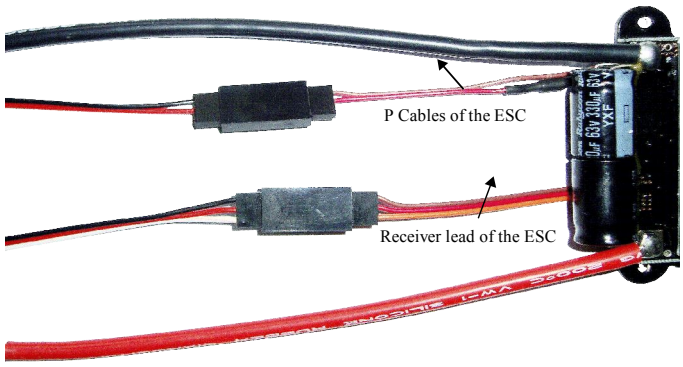


'Y' wires adopts Futaba wire configuration, i.e, red(+), black (-), and white (signal)

- Connect the 'Y' wires to USB. Plug in *receiver lead* and *power cable* from the Eurgle controller to those of the 'USB Linker' **respectively**. BE SURE THE POLARITY IS CORRECT! (Seeing the label on the USB Linker)





NOTE:1) Wrong polarity of P cables' connection may cause damage to controller, please make sure the polarity is always correct.

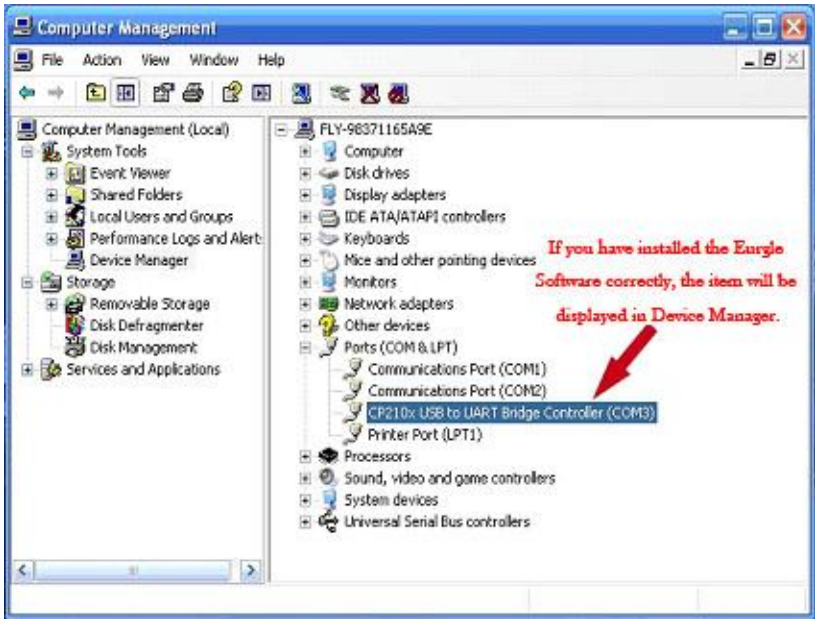
2) When the ESC is powered, then it is not necessary to use the auxiliary 'Y' wires but directly plug the receiver lead of the ESC into the USB Linker to read and programming.

3) The 'P Cables' of 100A-HV is designed for ONLY connecting with Eurgle USB Linker to read data from ESC and program the controller on PC. Wrong usage may cause permanent damage to controller, and such damage will AVOID manufacturer's warranty.

e.g, when the ESC is powered, DO NOT connect the 'P Cables' (red and black) of 100A-HV to 'Reserve for OPTO' on USB as power supply, otherwise will cause both controller and USB BURNED.

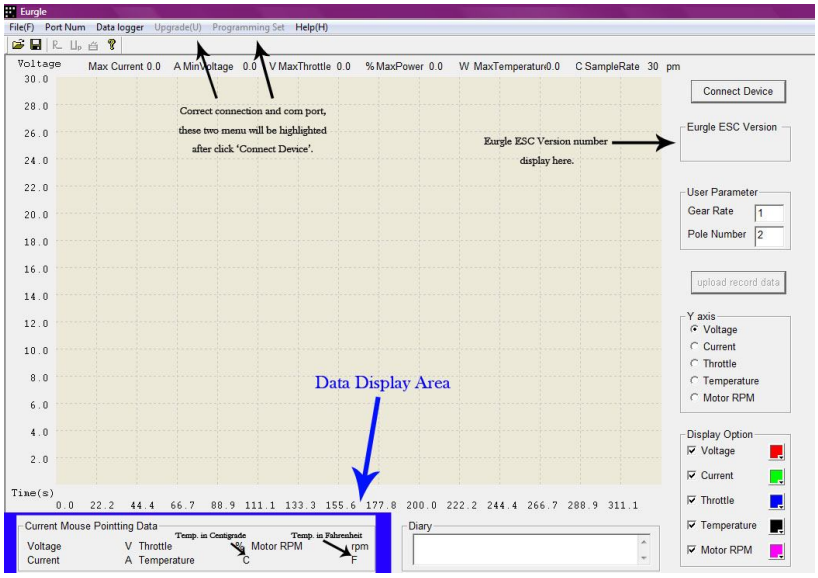
- Plug in the Eurgle USB Linker to one of the available USB ports of your computer. The red LED on 'USB Linker' will come on, and the green Led of ESC will light.

Ⅸ Using the software



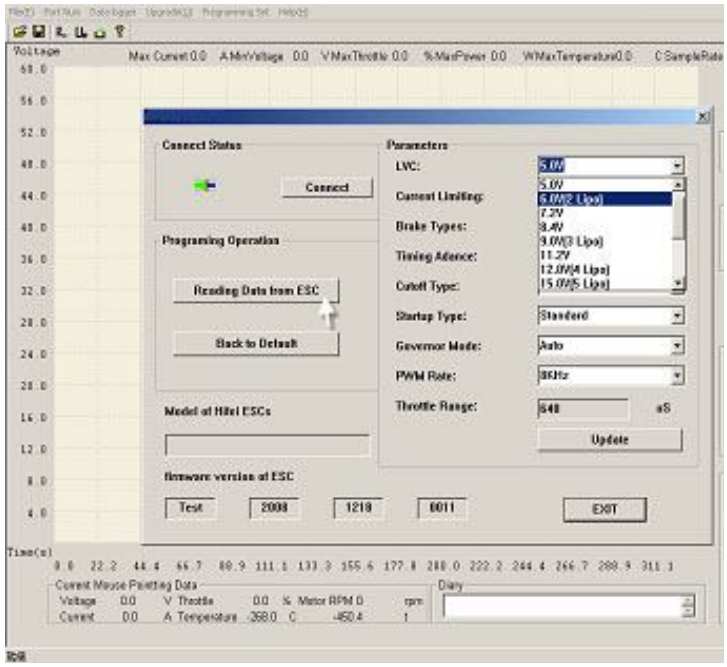
- Open the software by double clicking the icon **'Eurgle'** on your desktop.
- Select the com port by clicking the menu of **'Port Num.'***

• Click the **'Connect Device'** button. If the connection is correct, the menu with **'Upgrade'** and **'Programming set'** will be highlighted. The ESC Software Version information also will be displayed..



- **Programming the parameters of the ESC:**

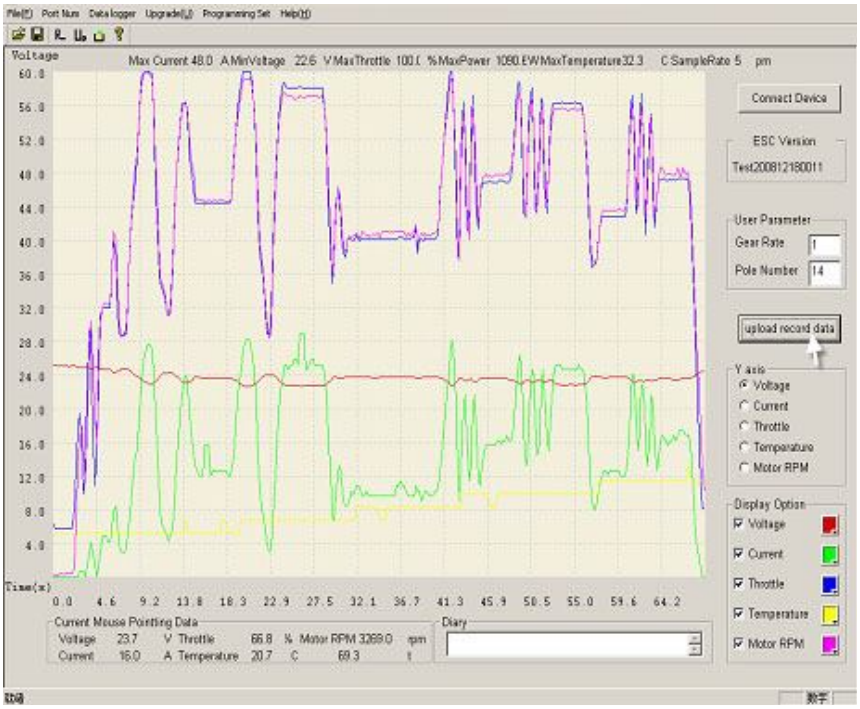
  - Select **'Programming Set'**. (also the Shortcuts button)
  - Click **'Connect'** button or **'Reading Data from ESC'** button to read out the current parameters of controller, and the firmware version is also displayed below.
  - Select the parameters you wish to set.
  - Click the **'Update'** button to save the modification.



- Clicking the **'Back to default'** button will modify the parameters of ESC to factory default.

NOTE: Please set the parameters always after current parameters of ESC is displayed in window and according to the instructing turn, otherwise programming of ESC will be defeated and ESC will still keep the parameters set in last time.

- **Reading the flight data from the ESC 100A HV**

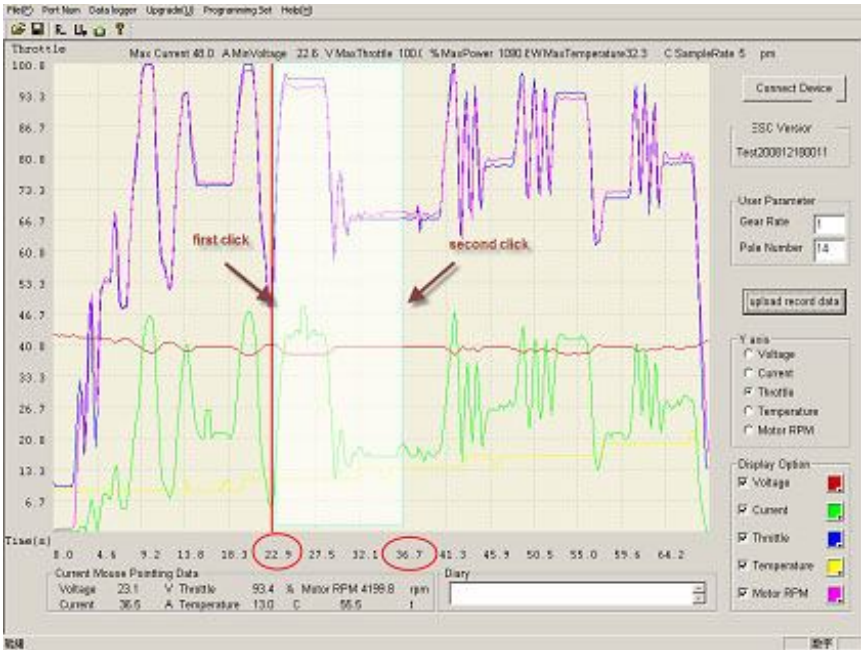


- Make sure to input the correct parameters in the area of **'User Parameter'**: **Gear Rate and Magnet Poles number of motor**, it is very important to read right motor RPM information.

- Click the **'upload record data'** button to upload the flight data from the controller, the green LED of ESC will flash.

- After clicking the 'upload record data' button, the flight data in ESC will be shown as curves in the display window.

- In the display window, you can choose a range of curves to analyze clearly by clicking the left button of mouse from start side to the end side of your chosen area, such as the below diagrammatic curves, data recorded from the 22.9 second to the 36.7 second as the chosen analyzing area (the area shown in translucent):



- Much clearer curves of the chosen area is displayed:

- Click the right button of mouse to display the original curves.

NOTE: 1) The software always displays the latest flight data.

2) Wherever the mouse points, a groups of data displayed below in the 'data display area' indicates current, voltage, throttle, motor RPM and temperature on the point. The data within the 'data display area' is changing when the mouse is dragging.

• Changing the recording parameters

Recommend: In order to well and accurately record the flight data, please know and program the recording configurations first before use, otherwise may cause losing of some data.

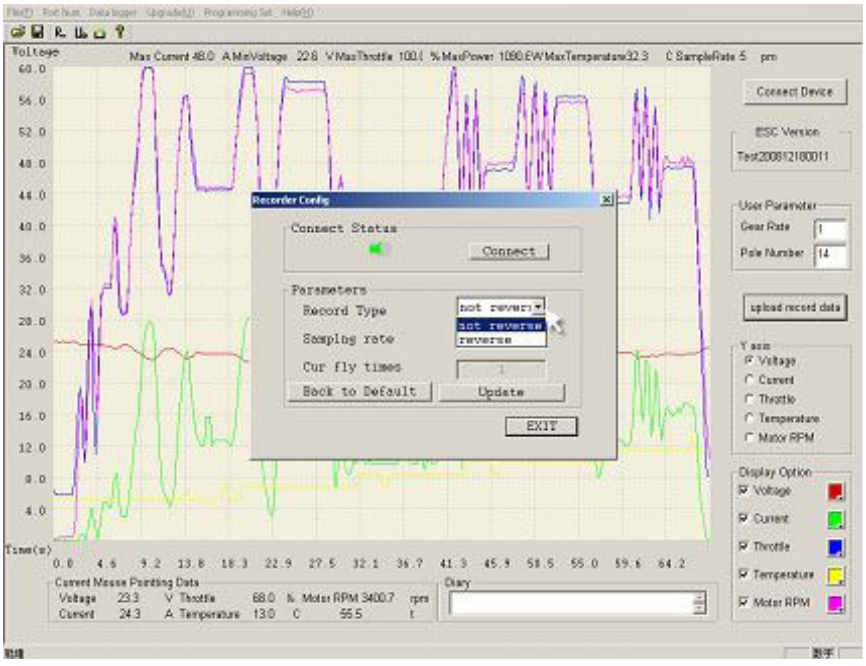
- Click the menu **'Data Logger'**.
- **'Recorder Configuration'** (Shortcuts button) .
- Click **'Connect'** button to display current configuration.
- Sampling Rate (1,2,3,5,10,20,30) times/a second.*

***The default sampling rate of ESC-100A-HV is 3 times in a second. The possible recording time is decided by the storage and set sampling rate. The longest recording time is 68 minutes.**

Sampling Rate	Possible Recording Time	Minimum Flying Time
Once/ a second	Approx. 68.1 minutes	> 60 seconds
Twice/ a second	Approx. 34.05 minutes	> 30 seconds
3 times/ a second	Approx. 22.7 minutes	> 20 seconds
5 times/a second	Approx. 13.62 minutes	> 10 seconds
10 times/a second	Approx. 6.81 minutes	> 5 seconds
15 times/a second	Approx. 3.405 minutes	> 3 seconds
30 times/a second	Approx. 2.27 minutes	> 2 seconds

Possible Recording Time means longest time the recorder can record with the set sampling rate.
Minimum Flying Time: with the set sampling rate, the minimum flying time of ESC should be more than the listed above form, otherwise the software can not read out and display the data on the PC window.

- Record type. **'Not reverse' and 'reverse'**.*



***'Not reverse' indicates the data logger cannot record any more when the space is filled up; 'reverse' indicates the data logger can record indefinitely by overlapping the former data and do a cycle. 'Not reverse' is default.**

- **'Cur fly times'** button is never highlighted.*

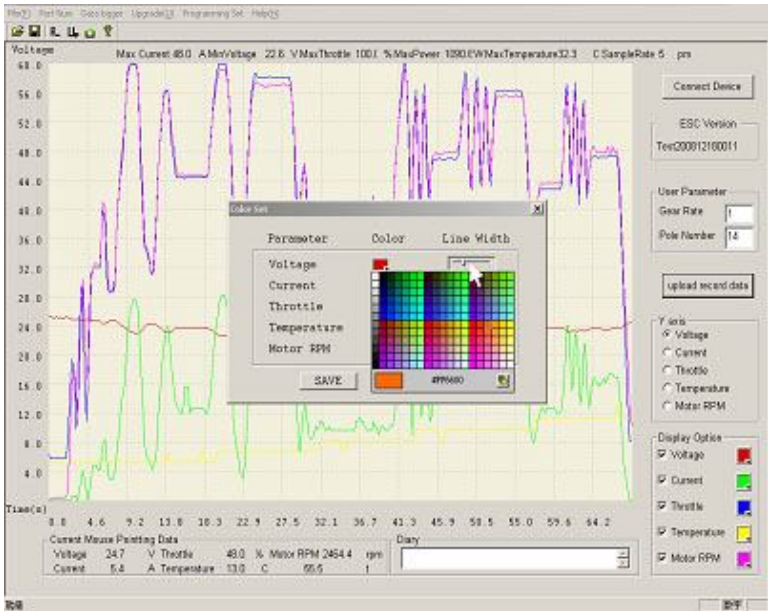
***'Cur fly times' button records the times you have flown. The ESC can record most 16 times flying. You can clear it by clicking the 'Clear Logger Data' button. That battery in power is calculated as once.**

- Select the configuration you wish to set, and click **'Update'** to save modifications.

- Click the button **'Clear Logger Data'** to clear the data in the ESC for enough space to record for the next flying.

We ***Recommend*** to always clear all data before next flying, and to save the useful data as a file on PC before clearing.

- Click **'Color Set'** button to set the displaying color and line width according to your favor, and click **'SAVE'** button to save the modifications.



• Changing the display channel

- Y axis reference

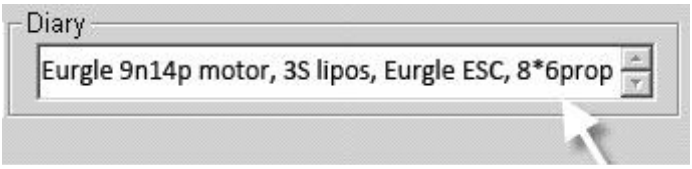
The 'X' axis presents the flying time, but the 'Y' axis can present the corresponding numerical value according to your selected category in the 'Y axis' zone.

- Parameter color
- Diary
- Save the flight data. Click the menu **'File'** to save data on PC.

• Diary panel

The logbook can be filled in ' Diary ' window.

Writing down some illustration about the power system or your opinions or feelings in the diary panel and save it just like your private flying diary.



Appendix

Eurgle ESC offer eight user programmable features, including low cutoff voltage, current limiting, brake type, timing advance, cutoff type, soft start, governor mode and PWM switching rate. Through the USB Linker, Eurgle ESC-100A-HV can be programmed easily on PC, and it is also good compatible with Eurgle USB or program via throttle stick of the transmitter.

- Low Cut-off Voltage

Option 1:Auto Lipo	Auto Lipo Cells Detecting
Option2:12.0v(default)	4 Lipo cells
Option 3:15.0v	5 Lipo cells
Option 4:18.0v	6 Lipo cells
Option 5:21.0v	7 Lipo cells
Option 6:24.0v	8 Lipo cells
Option 7:27.0V	9 Lipo cells
Option 8:30.0V	10 Lipo cells
Option 9:33.0v	11 Lipo cells
Option10:36.0v	12 Lipo cells

NOTE: Low Cut-off Voltage can protect the main battery from being discharged too low, and provide the normal operating voltage to receiver and servos.

- Current Limiting

Option 1: Very Sensitivity	Low over-current threshold, will rapidly shut-down.
Option 2:Standard(default)	Moderate over-current threshold, will shut down after a slight delay. Recommended for inrunner motors.
Option 3:Insensitivity	High over-current threshold, will shut down after a slight delay. Recommended for outrunner motors. **Only experienced modelers should use this programming feature**
Option 4: disabled	Current limiting detection disabled. **Only experienced modelers should use this programming feature.**

NOTE: Default setting is recommended. If you change the setting, damage to the controller as a result of over current will be not covered by the manufacturer's warranty.

- Brake Type

Option 1:Brake disabled (default)	Brake disabled is mainly used for helicopters.
Option 2:Soft brake	Soft brake provides 50% of full braking power. General aircraft use, with fixed or folding prop
Option 3:Hard brake	Hard brake is 70% braking power. Direct drive applications where more braking power is required. Hard brake should only be used below 12V.

- Timing Advance

Option 1: Low advance timing	Recommended for more lower pole count motors. Gives more power and slightly less efficient.
Option 2: middle advance timing	Recommended for most motors .Gives a good balance of power and efficiency.
Option 3: High advance timing	Recommended for most of higher pole count motors
Option4:Auto(default)	Recommended for most of all brushless motors.

- Cutoff Type

Option 1 :Hard cutoff (default)	When battery voltage reaches cut-off voltage the motor will shutdown immediately. Motor can be restarted by closing the throttle to the lowest position and then move the throttle as normal
Option 2: Soft cutoff	When battery voltage reaches cut-off voltage, the ESC will slowly reduce motor power to zero, you will notice a decrease in power and it is time to land, the throttle maintains its full linear response.

NOTE: Soft cutoff is always automatically active in Governor Mode.

- Soft Start

Option 1: Soft start	Recommended for helicopters
Option 2:Standard start (default)	Recommended for most of the fixed or folding prop airplanes, and some helicopters.
Option 3: Fast start	Recommended for fastest startup.

- Governor Mode

Option 1: Auto calibrating throttle (default)	Recommended for general aircraft
Option 2: Governor Low	For helicopter application. Throttle's response is slower, and control gain is lower.
Option 3: Governor High	For helicopter application. Throttle's response is quicker, and control gain is higher

NOTE: The Governor mode acts as an RPM control. Throttle stick position determines the RPM that the motor runs and the controller will attempt to hold that RPM regardless of load changes. In Governor Mode, the brake is always disabled and soft cutoff is automatically active.

- PWM Switching Rate

Option 1: Low (default)	Recommended for most brushless motors
Option 2: Middle	Recommended for low inductance motors
Option 3: High	Recommended for very low inductance motors

Note: we strongly recommend only the experienced modeler could change this setting.